Specification Amendments:

Please enter the following paragraph directly below the title on page 1:

This application is a continuation of patent application serial number 09/302,078, entitled "Nyquist Filter and Method," filed on April 28, 1999, which application is incorporated herein by reference.

Please amend the paragraph beginning on page 1, line 8 as follows:

The present invention relates to filters such as the kind that can be utilized in communications systems. Figure 1 illustrates a basic block diagram of a digital communication system [[10]] that utilizes pulse amplitude modulation. In this system, a pulse generator 12 receives clock pulses and binary input data. The output of pulse generator 12 will be a digital binary stream of pulses.

Please amend the paragraph beginning on page 10, line 13 as follows:

The envelop of the time domain response decays more rapidly if the frequency response is smooth, that is continuously differentiable. Unfortunately, the frequency response of a raised cosine filter is non-ideal when the square root is taken. In particular, when the square root of a raised cosine filter is taken, the first derivative is discontinuous at the boundary of regions II and III. As a result, the frequency domain curve does not come in ~~smooth~~ smoothly at the stopband as in the raised cosine case (see Figure 3a). Instead, the curve comes in sharply to the stopband. A discontinuity in the frequency domain can lead to higher peaking at longer duration in the time domain.

Please amend the paragraph beginning on page 14, line 11 as follows:

The performance characteristic of the first embodiment filter is illustrated in Figure 5 along with curves from a square root raised cosine filter where $\alpha = 0.17$ and $\alpha = 0.2$. Each of these curves are taken in the square root version. These curves were taken from simulations of a system as described in co-pending application Serial No. ~~_____ (COM-002).~~ 09/295,660, now U.S. Patent No. 6,252,910. In that system, a roll-off factor $\alpha = 0.17$ was found to be optimal for a raised cosine filter. As demonstrated by Figure 5, the performance of the new Nyquist filter

is improved at the stop bands, i.e., outside the ideal bandwidth of the channel. As shown in the figure, the filter of the present invention has 10dB lower transmissions at the stop band when truncated to eight symbol periods. This represents a significant improvement.

Please amend the paragraph beginning on page 16, line 12 as follows:

Two examples of filters that meet the criteria for the new class of Nyquist filters have been described. Other functional forms may also meet the criteria of continuous derivatives and can be considered for this type of filters. These expressions might include hyperbolic sines and cosines, polynomials, and ~~ecliptic~~ elliptic functions.

Please amend the paragraph beginning on page 17, line 16 as follows:

One example of a system that can utilize a filter of the present invention is described in co-pending application Serial No. _____ ~~(COM 002),~~ 09/295,660, now U.S. Patent No. 6,252,910, which is incorporated herein by reference as if reproduced in its entirety. A Nyquist filter of the present invention can be used in place of each Nyquist filter included in that system. This system will now be described with respect to Figures 7-9.

Please amend the paragraph beginning on page 17, line 21 as follows:

Figure 7 illustrates an exemplary radio system 700. System 700 could be a cellular telephone system, a two-way radio dispatch system, a localized wireless telephone or radio system or the like. Base unit 702 can communicate over transmission medium 704 to one or more terminal units 706. Transmission medium 704 represents the wireless communication spectrum. Terminal units 706 can be mobile units, portable units, or fixed location units and can be one way or two way devices. Although only one base unit is ~~illustrated~~ illustrated, the radio system 700 may have two or more base units, as well as interconnections to other communication systems, such as the public switched telephone network, an internet, and the like. In the preferred embodiment, the system provides for full duplex communications. The teachings of the present

invention, however, apply equally to half duplex systems, simplex systems as well as to time division duplex and other two-way radio systems.

Please amend the paragraph beginning on page 22, line 1 as follows:

Based upon the information provided by magnitude tracker 858, the likelihood that a bit is in error is calculated in fade finder block 859. ~~Blocks~~ Bits determined to be a high risk of being in error are marked as "at-risk" bits in block 861. The "at-risk" bit information is fed forward to the appropriate one of red or blue signal decoding blocks 866 and [[869]] 868 and is used by the decoding blocks' error correcting processes. Symbol synch block 854 also feeds phase tracker 860, which is discussed below.